

## REMARKS

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174

175 In response to the Office Action dated July 26, 2005, Applicant has amended the  
176 claims and the specification. Claims 40-50 remain pending in the application. Applicant  
177 has also added new claims 51 to 69 in the application. Reconsideration of the rejections  
178 and allowance of all claims is respectfully requested.

179

### 180 The Rejections

181 **1. The Examiner has rejected Claims 40-50 as being indefinite because the terms**  
182 **"substantial" and "substantially" allegedly render the claim indefinite.**

183

184 The Examiner has rejected Claims 40-50 as being indefinite. Applicant has amended the  
185 claim language in Claims 40 and 50 to address the Examiner's comments. Applicant  
186 submits that the claims are allowable and requests that the rejection be withdrawn.

187

188 **2. Claims 40-50 rejection under 35 U.S.C. 102(e) as being anticipated by Narvaez et.**  
189 **al. U.S. Patent No. 6,704,320.**

190

191 The Examiner has rejected the Claims 40-50 under 35 U.S.C. 102(e) as being  
192 anticipated by U.S. Patent No. 6,704,320 ("Narvaez"). Applicant respectfully disagrees.  
193 First, Narvaez is directed to solving a different problem than Applicant's invention.  
194 Narvaez describes a network router, a specialized controlling computer. Narvaez  
195 proposes an algorithm that runs on a network router to build an optimal routing table for a  
196 network. In other words, Narvaez discloses an algorithm for a network router to calculate  
197 and build a forwarding table containing the shortest paths for sending data packets  
198 between two separate computers (i.e., "nodes" as used in Narvaez) in the router's network.  
199 For example, the first sentence of the Narvaez abstract declares, "[a] dynamic shortest  
200 path tree (SPT) algorithm for a router...". The first sentence of the Narvaez  
201 BACKGROUND OF THE INVENTION states, "1. Field of the Invention, The present  
202 invention relates to routing of information packets in a communications network, and  
203 more particularly, to a router...". None of the computers in the pairs of computers (or  
204 nodes) discussed in Narvaez are involved in running the algorithm. The only computer  
205 running the algorithm is the router. In Narvaez, the communications between the  
206 computers (or nodes) are directed by the centralized computer, namely the router.

207

208 In contrast, Applicant's invention describes an algorithm that runs in a  
209 decentralized manner on many computers to organize them for efficient sorting,  
210 searching, and broadcasting. All the inter-networked computers described in Applicant's  
211 invention are executing the algorithms necessary to sort, search, and broadcast without  
212 centralized coordination. As set forth in the abstract, Applicant's invention discloses a  
213 technique for organizing a plurality of computers *without the use of a controlling*  
214 *computer*. In stark contrast, Narvaez describes a single controlling computer.

215

### 216 A. Claim 40

217

218 The Examiner has rejected Claim 40 because Narvaez allegedly teaches a  
219 distributed computer network, comprising a collection of computers. Applicant

220respectfully disagrees. The "distributed computer network" to which Narvaez refers  
221consists of computers that are distributed in the sense that they are not physical neighbors.  
222They are not distributed computers in the sense that they are simultaneously computing  
223the Narvaez algorithm at multiple locations and somehow coordinating the results.  
224Narvaez does not disclose a distributed processing network, but merely an algorithm to  
225update a router table.

226

227       The Examiner has also rejected Claim 40 because Narvaez allegedly discloses  
228means for an added computer to locate the collection of computers. The Examiner cites  
229to col. 11, lines 10-28 of Narvaez on this point ("discloses all connected nodes are  
230determined with associated links"). Applicant respectfully disagrees. In Narvaez, each  
231computer in the network communicates with the router directly regarding its location.  
232See col. 12, lines 47-49. Narvaez does not disclose means for an added computer to  
233locate the collection of computers.

234

235       The Examiner has rejected Claim 40 because Narvaez allegedly discloses means  
236for the added computer to establish a connection to the collection of computers. The  
237Examiner cites to col. 11, lines 44-58 of Narvaez as disclosing "links are determined  
238between main node and all other nodes." Applicant respectfully disagrees. The cited  
239portion of Narvaez merely discloses setting "weight" values for a new path between two  
240existing nodes (or computers) in the router's network. This is not a means for the added  
241computer to establish a connection to the collection of computers. Narvaez is directed to  
242establishing a path from one computer to another single computer. In contrast,  
243Applicant's invention is directed to establishing a virtual, dynamic hierarchical  
244relationship from one computer to many computers in a network.

245

246       The Examiner has rejected Claim 40 because Narvaez allegedly discloses means  
247for each computer in the collection of computers, including the added computer, to  
248establish a logical arrangement such that each computer in the collection of computers  
249can act as a top level of a hierarchy, wherein the hierarchy includes at least a substantial  
250number of the computers in the collection of computers. The Examiner cites to col. 10,  
251lines 37-62 of Narvaez as discloses updated tree adds new nodes and deletes nodes  
252according to distance calculatoin from the main node. Applicant respectfully disagrees.  
253Narvaez does not describe a system or network where a computer is added or deleted.  
254Narvaez describes recalculation of optimized paths from one node to another. Moreover,  
255there is no node in Narvaez acting as the top level of a hierarchy. Indeed, Narvaez does  
256not even use the word "hierarchy" in the entire patent. Narvaez merely discusses an  
257algorithm operating on a single centralized computer, i.e., the router. In contrast, the  
258hierarchies in Applicant's invention consist of relationships between actual, physically  
259distributed computers.

260

261       For the same reasons, rejected Claims 41-50 are allowable as being dependent  
262upon Claim 1, which is not anticipated by Narvaez.

263

264       **B.     Claim 41**

265

266       The Examiner has rejected Claim 41 because Narvaez allegedly discloses the

distributed computer network of claim 40, wherein the hierarchy comprises a set of member computers, a membership of which depends upon a logical location of the computer that acts as the top level of the hierarchy. The Examiner cites to col. 11, lines 10-60 of Narvaez on this point. Applicant respectfully disagrees. In addition to the foregoing reasons why Narvaez does not disclose the elements of Claim 40, Narvaez is not creating or establishing any hierarchy in the network. Narvaez is merely using an algorithm to sort calculated paths between nodes to find a "shortest path" from one node to another. Applicant's invention, in contrast, establishes a virtual, dynamic hierarchical relationship from one computer to many computers in a network, where the "top" of a hierarchy may be a computer that initiates a distribution of a message to the collection or initiates a search query to the collection of computers. Narvaez does not disclose this either.

279

#### 280 C. Claim 42

281

282 The Examiner has rejected Claim 42 because Narvaez allegedly discloses the  
283 distributed computer network of claim 40, further comprising means for the computer  
284 that acts as the top level of the hierarchy to initiate a search for one of a specified  
285 computer and specified data. The Examiner cites to col. 12, lines 16-35 of Narvaez on  
286 this point. Applicant respectfully disagrees. Narvaez discloses inspecting "edges" or data  
287 parameters in his table of nodes to calculate a distance attribute or "weight" for a path  
288 between two nodes. Narvaez does not disclose searching of computers. The searches to  
289 which Narvaez refers are searches of tables located on a single centralized computer, i.e.,  
290 the router. Narvaez is "searching" mathematical parameters in an array of data  
291 characterizing the nodes in his network. Applicant's invention, on the other hand,  
292 searches physically distributed computers for specific information. Narvaez does not. In  
293 addition to the reasons why Narvaez does not disclose the elements of Claim 40, Narvaez  
294 does not disclose the elements of Claim 42.

295

#### 296 D. Claim 43

297 The Examiner has rejected Claim 42 because Narvaez allegedly discloses the  
298 distributed computer network of claim 42, wherein each computer in the collection of  
299 computers includes a searchable index of the contents of the computer for facilitating said  
300 search. The Examiner cites to col. 12, lines 16-35 of Narvaez on this point. Applicant  
301 respectfully disagrees. Narvaez discloses inspecting "edges" or data parameters in his  
302 table of nodes at the router to calculate a distance attribute for a path between two nodes.  
303 Narvaez does not disclose searching of computers. Narvaez is "searching" mathematical  
304 parameters in a data array characterizing the nodes in his network. Narvaez does not  
305 disclose each computer in the collection including a searchable index of the contents of  
306 the computer to facilitate a search.

307

#### 308 E. Claim 44

309

310 The Examiner has rejected Claim 44 because Narvaez allegedly discloses the  
311 distributed computer network of claim 40, further comprising means for the computer  
312 that acts as the top level of the hierarchy to broadcast information throughout the  
313 hierarchy. The Examiner cites to col. 12, lines 16-35 of Narvaez on this point. Applicant

314respectfully disagrees. Narvaez merely discusses inspecting data parameters in a data  
315array to calculate a distance attribute for a path between two nodes. Narvaez does not  
316discuss or deal with broadcasting information throughout a network of computers. It also  
317does not disclose means for a computer acting as the top level of a hierarchy to broadcast  
318information throughout the hierarchy.

319

320 **F. Claim 45**

321

322 The Examiner has rejected Claim 45 because Narvaez allegedly discloses the  
323distributed computer network of claim 40, further comprising means to control a  
324bandwidth utilization of the collection of computers. The Examiner cites to col. 1, lines  
32515-30 of Narvaez on this point. Applicant respectfully disagrees. Narvaez does not  
326disclose means to control bandwidth utilization of a collection of computers. Narvaez  
327only discloses, in the context of discussing prior art router table algorithms, that  
328bandwidth is merely a factor in the "link cost" or "weight" to be used by a router to  
329determine the "shortest path" between two nodes. This does not disclose controlling  
330bandwidth utilization of a collection of computers.

331

332 **G. Claim 46**

333

334 The Examiner has rejected Claim 46 because Narvaez allegedly discloses the  
335distributed computer network of claim 40, further comprising a plurality of lower level  
336computers, wherein information regarding the lower level computers is stored in a  
337respective one of the computers in the collection of computers. The Examiner cites to  
338col. 4, lines 10-60 of Narvaez on this point. Applicant respectfully disagrees. For the  
339same reasons Narvaez does not disclose the elements of Claim 40, it does not anticipate  
340Claim 46.

341

342 **H. Claim 47**

343

344 The Examiner has rejected Claim 47 because Narvaez allegedly discloses the  
345distributed computer network of claim 40, further comprising means for rebuilding a  
346logical arrangement of the collection of computers following a loss of at least one  
347computer from the collection of computers. The Examiner cites to col. 4, lines 10-60 of  
348Narvaez. Applicant respectfully disagrees. Narvaez discloses calculation of the shortest  
349path from one node to another in a network for a router table. Narvaez recalculates the  
350optimal route between nodes (according to the weighting factors considered by the  
351disclosed algorithm). Narvaez does not teach rebuilding a logical arrangement of the  
352collection of computer following a loss of at least one computer from the collection of  
353computers. Applicant's invention teaches how to rebuild the logical arrangement within  
354the collection of computers, without a centralized controlling computer, following the  
355loss of one or more computers in the collection due to functionality reasons or network  
356problems. This allows, for example, the collection of computers to rebuild its logical  
357arrangement in the context of a failure recovery. Narvaez does not teach this.

358

359 **I. Claim 48**

360

361 The Examiner has rejected Claim 48 because Narvaez allegedly discloses the  
362 distributed computer network of claim 40, further comprising means for distributing  
363 software updates throughout the collection of computers. The Examiner again cites to  
364 col. 4, lines 10-60 of Narvaez on this point. Applicant respectfully disagrees. For the  
365 same reasons as Claim 44, Narvaez does not disclose distributing software updates  
366 throughout a collection of computers, much less how to accomplish such a task. Narvaez  
367 is only calculating a router table.

368

369 **J. Claim 49**

370

371 The Examiner has rejected Claim 49 because Narvaez allegedly discloses the  
372 distributed computer network of claim 40, wherein each computer in the collection of  
373 computers includes dynamic physical address. The Examiner cites to col. 7, lines 40 –  
374 col. 8, lines 60 of Narvaez on this point. Applicant respectfully disagrees. Narvaez  
375 discloses an algorithm that is purportedly "dynamic," presumably because he updates the  
376 router table. This has nothing to do with and does not disclose a distributed computer  
377 network wherein each computer in the collection of computers includes a dynamic  
378 physical address. Applicant's invention teaches organizing a collection of computers  
379 whose address may change due to dynamic allocation of addresses due to mechanisms  
380 such as DHCP (dynamic host configuration protocol) or network address translation  
381 techniques.

382

383 **K. Claim 50**

384

385 The Examiner has rejected Claim 50 because Narvaez allegedly discloses the  
386 distributed computer network of claim 40, further comprising means for generating the  
387 logical arrangement to substantially minimize a logical distance between a logical center  
388 of the collection of computers and a logical collection edge. The Examiner cites to col. 4,  
389 lines 10-60 of Narvaez on this point. Applicant respectfully disagrees. Narvaez is  
390 optimizing routes from one node to another node in his network. In contrast, Applicant's  
391 invention manages the logical arrangement of the computers in the collection of  
392 computers to maintain an efficient geometry for a one-to-many broadcast of data or  
393 search query.

394

395 For the foregoing reasons, Applicant respectfully submits that Narvaez does not  
396 anticipate Claims 40-50 and the rejections should be withdrawn.

397

398 **Amendment to the Specification:**

399 Applicant has amended the specification to correct a description of Figure 6 in the  
400 BRIEF DESCRIPTION OF THE DRAWINGS section on page 10, line 4 ("Fig 6  
401 illustrates the rapid increase in the number of computers reached with the addition of each  
402 concentric polygon."). This amendment corrects a typographical error (removing a  
403 description of Figures 6A to 6C) because Figures 6A – 6C do not exist. Only Figure 6  
404 was submitted with the original application. The description of Figure 6 is found on page  
405 17, lines 19-20. Accordingly, the amendment does not add new matter to the application.

406

407 Applicant has also amended the specification in the paragraph beginning on page

40812, line 21 as follows:

409 "The logical means to communicate 25 is defined by a neighbor relationship.  
410 Each computer possesses links to four neighbors. Fig. 3A illustrates each computer's  
411 neighbors as neighbor0 40, neighbor1 41, neighbor2 42, and neighbor3 43. Neighbor1 41  
412 is clockwise from neighbor0 40, neighbor2 42 is clockwise from neighbor1 41, and  
413 neighbor3 43 is clockwise from neighbor2 42."

414

415 This amendment is to correct two typographical errors. The first is to remove a  
416 comma between "neighbor0" and "40" on page 13, line 1. The second typographical error  
417 stated that the described neighbor relationship between the computers shown in Figure  
418 3A (*i.e.*, neighbor0 40 to neighbor1 41 to neighbor2 42 to neighbor3 43) were  
419 "counterclockwise", when they were actually clockwise – as shown in Figure 3A. In  
420 particular, neighbor1 41 is the next computer in a clockwise direction from neighbor0 40,  
421 neighbor2 42 is the next computer in the clockwise direction from neighbor1 41, and so  
422 on. *See* Figure 3A. This amendment is to correct typographical errors and does not add  
423 any new matter.

424

425 Applicant has amended the reference to "neighbor 41" to "neighbor1 41" to  
426 correct a typographical error in line 20 of page 13. This amendment does not add any  
427 new matter.

428

429 **Amendment to the Drawings:**

430 The Examiner has objected to the drawings submitted with the application.

431 With regard to a missing Figure 10D, Applicant previously corrected the error  
432 referring to Figure 10D in the October 10, 2001 Preliminary Amendment.

433

434 In the above Amendment to the Specification, the reference to Figs. 6A-6C in the  
435 BRIEF DESCRIPTION OF THE DRAWINGS section has been corrected to make  
436 reference to Figure 6, along with a description of the drawing which is set forth on page  
437 17, lines 19-21 of the application. *See* Amendment to the Specification. This amendment  
438 is to fix a typographical error. Since, the substituted text referring to Figure 6 is found on  
439 lines 19-21 of page 17, Applicant submits that this amendment does not add new matter  
440 to this application.

441

442 The Examiner objected to Figure 3B because the reference to "neighbor 41" on  
443 page 13 of the specification did not exist. The reference to "neighbor 41" is a  
444 typographical error and should be "neighbor1 41", which reference is shown in Figure  
445 3A. Applicant submits that this overcomes Examiner's objection to Figure 3B.

446

447 **PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. §1.136(a)**

448

449 This is a petition for an extension of the time in the above-identified application  
450 for three months to respond to the Office Action dated July 26, 2005.

451 The extension of time requested and corresponding fee, as set forth in 37 C.F.R.  
452 §1.17(a), are checked below:

453 Total months requested      Fee for extension      Fee for Small Entity

454

455[ ] one month	\$ 120.00	\$ 60.00
456[ ] two months	\$ 450.00	\$ 225.00
457[X] three months	\$ 1020.00	\$ 510.00
458[ ] four months	\$ 1590.00	\$ 795.00
459[ ] five months	\$ 2,160.00	\$ 1080.00

460

461Extension of time fee due with this request: **\$510.**

462

463Applicant has enclosed a check in the foregoing amount payable for the requested  
464extension of time.

465

466For the foregoing reasons, Applicant respectfully requests the Examiner to  
467withdraw all of the objections and rejections and allow issuance of the claims.

468

469

470

471

Respectfully submitted,

472

473

Russell H. Fish III

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476

477

478Dated: January 26, 2006

479

480Russell H. Fish III

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